Proposed claim revisions:

1-5. (Canceled)

6-13. (Canceled)

14. (Currently amended) A method to determine outcome of a human subject having ER+ (estrogen receptor positive) breast cancer if treated with an ~~antiestrogen agent~~ aromatase inhibitor against breast cancer[or of a human subject afflicted with breast cancer]and treated with an ~~antiestrogen agent~~ aromatase inhibitor against breast cancer, said method comprising:

producing cDNA copies of RNA from a sample of breast cancer cells from said human subject, wherein

~~a ratio of HoxB13 and IL17BR RNA expression levels, based on said cDNA copies, that is below the mean (average) ratio of HoxB13 and IL17BR RNA expression levels in ER+ breast cancer cells indicates a cancer free outcome, and~~

a ratio above the mean (average) ratio of HoxB13 and IL17BR RNA expression levels, based on said cDNA copies, in ER+ breast cancer cells indicates an outcome comprising cancer ~~recurrence~~ that is non-responsive to said aromatase inhibitor;

wherein said mean (average) ratio of HoxB13 and IL17BR RNA expression levels is determined from the mean (average) of HoxB13 RNA expression levels and the mean (average) of IL17BR RNA expression levels in ER+ breast cancer cell samples from human breast cancer subjects that respond to treatment with said ~~antiestrogen agent~~ aromatase inhibitor against breast cancer and human breast cancer subjects that do not respond to treatment with said ~~antiestrogen agent~~ aromatase inhibitor.

[see paragraph [0040], paragraph bridging pages 13-14]

15. (canceled) ~~The method of claim 14 wherein said RNA expression level(s) are indicative of the probability of recurrence of cancer via metastasis or of survival outcome.~~

16. (Currently amended) The method of claim 14 wherein said ~~antiestrogen agent against breast cancer is selected from a selective estrogen receptor modulator (SERM), selective estrogen receptor downregulator (SERD), or~~ aromatase inhibitor (AI) is a non-steroidal agent.

17. (canceled)

18. (Previously presented) The method of claim 14 wherein said cDNA copies of HoxB13 and IL17BR RNA are used for RNA amplification from said sample of breast cancer cells.

19. (Previously presented) The method of claim 14 wherein said cDNA copies of HoxB13 and IL17BR RNA are used in quantitative PCR.

20. (Previously presented) The method of claim 19 wherein said quantitative PCR is real-time PCR and said ratio of HoxB13 and IL17BR RNA expression levels is expressed as a ΔC_t of the C_t values for HoxB13 and IL17BR RNA expression levels.

21. (Previously presented) The method of claim 14 wherein said sample is a formalin fixed paraffin embedded (FFPE) sample.

22. (Original) The method of claim 14 wherein said sample is obtained by a minimally invasive technique or selected from core biopsy, excisional biopsy, a ductal lavage sample, a fine needle aspiration sample, or cells microdissected from said sample.

23. (Currently amended) A method to predict an expected response or lack of response to treatment with an ~~antiestrogen agent~~ aromatase inhibitor against breast cancer in a human ER+ (estrogen receptor positive) breast cancer patient, said method comprising

determining an expected non-response to treatment with an ~~antiestrogen agent~~ aromatase inhibitor against breast cancer for said patient by producing cDNA copies of mRNA from a sample of breast cancer cells from said patient and determining, based on said cDNA copies, a ratio of HoxB13 and IL17BR RNA expression levels that is higher than the mean (average) ratio of HoxB13 and IL17BR RNA expression in ER+ breast cancer cells~~; and/or~~

~~determining an expected response to treatment with said antiestrogen agent against breast cancer for said patient by producing cDNA copies of mRNA from a sample of breast cancer cells from said patient and determining, based on said cDNA copies, a ratio of HoxB13 and IL17BR RNA expression levels that is lower than the mean (average) ratio of HoxB13 and IL17BR expression in ER+ breast cancer cells~~

wherein said mean (average) ratio of HoxB13 and IL17BR RNA expression levels is determined from the mean (average) of HoxB13 RNA expression levels and the mean (average) of IL17BR RNA expression levels in ER+ breast cancer cell samples from human breast cancer subjects that respond to treatment with said ~~antiestrogen agent~~ aromatase inhibitor against breast cancer and

human breast cancer subjects that do not respond to treatment with said ~~antiestrogen agent~~ aromatase inhibitor.

[see paragraph [0040], paragraph bridging pages 13-14]

24. (canceled) ~~The method of claim 23 wherein said RNA expression level(s) are indicative of the probability of recurrence of cancer via metastasis or of survival outcome.~~

25. (Currently amended) The method of claim 24 wherein said ~~antiestrogen agent against breast cancer is selected from a selective estrogen receptor modulator (SERM), selective estrogen receptor downregulator (SERD), or~~ aromatase inhibitor (AI) is a non-steroidal agent.

26. (canceled)

27. (Previously presented) The method of claim 24 wherein said cDNA copies of HoxB13 and IL17BR RNA are used for RNA amplification from said sample of breast cancer cells.

28. (Previously presented) The method of claim 24 wherein said cDNA copies of HoxB13 and IL17BR RNA are used in quantitative PCR.

29. (Previously presented) The method of claim 28 wherein said quantitative PCR is real-time PCR and said ratio of HoxB13 and IL17BR RNA expression levels is expressed as a ΔC_t of the C_t values for HoxB13 and IL17BR RNA expression levels.

30. (Previously presented) The method of claim 24 wherein said sample is a formalin fixed paraffin embedded (FFPE) sample.

31. (Original) The method of claim 24 wherein said sample is obtained by a minimally invasive technique or selected from core biopsy, excisional biopsy, a ductal lavage sample, a fine needle aspiration sample, or cells microdissected from said sample.

32-38. (canceled)

39-41. (canceled)

42. (canceled)

43-48. (canceled)

49-50. (canceled)

51. (canceled)

52. (Previously presented) The method of claim 14 wherein said assaying comprises detecting expression of a HoxB13 sequence selected from SEQ ID NOS: 6, 7, 10, 11-31, 35 or 37.

53. (Previously presented) The method of claim 14 wherein said assaying comprises detecting expression of an IL17BR sequence selected from SEQ ID NOs: 1, 2, 3, or 8, or 32-34.

54. (Previously presented) The method of claim 23 wherein said assaying comprises detecting expression of a HoxB13 sequence selected from SEQ ID NOS: 6, 7, 10, 11-31, 35 or 37.

55. (Previously presented) The method of claim 23 wherein said assaying comprises detecting expression of an IL17BR sequence selected from SEQ ID NOs: 1, 2, 3, or 8, or 32-34.

56-61. (canceled)

62. (Currently amended) The method of claim 14 wherein said assaying is by hybridization to a polynucleotide comprising sequences of at least 15 nucleotides from the 3' untranslated region, the coding region, or the 5' untranslated region of human HoxB13 or IL17BR sequences.

63. (Currently amended) The method of claim 23 wherein said assaying is by hybridization to a polynucleotide comprising sequences of at least 15 nucleotides from the 3' untranslated region, the coding region, or the 5' untranslated region of human HoxB13 or IL17BR sequences.

64-66. (canceled)

67-68. (canceled)

69. (Currently amended) The method of claim 25 wherein said non-steroidal agent is selected from anastrozole, letrozole, and vorozole ~~29 wherein said antiestrogen agent is tamoxifen~~.

70. (canceled)

71. (New) The method of claim 69 wherein said non-steroidal agent is letrozole.

72. (New) The method of claim 16 wherein said non-steroidal agent is selected from anastrozole, letrozole, and vorozole.

73. (New) The method of claim 72 wherein said non-steroidal agent is letrozole.

A study was conducted on letrozole in patients with estrogen receptor-positive breast cancer. Needle core biopsies from newly diagnosed, untreated patients with ER+ breast cancer were taken at baseline and day 15. Patients had palpable tumors of >2 cm in diameter.

Taqman RT-PCR was performed RNA samples from the biopsies at bioTheranostics, San Diego, CA. Evaluable PCR/expression data were obtained from 47 pre-treatment samples and 53 post 15-day treatment samples. Primary endpoint was antiproliferative response defined as ln[Ki67] < 1 on day 15 in the samples analyzed.

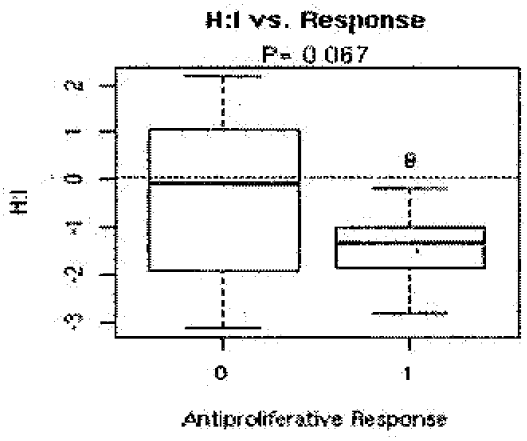

Figure 1 Boxplot of HOXB13:IL17BR ratio (y-axis) according to antiproliferative response (x-axis, 0 is non-responder, 1 is responder). P values are from two-sample Wilcoxon rank sum test.

Using the mean (average) at H:I of 0 as a cutoff, a high HOXB13:IL17BR ratio predicts non-response.